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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,659	08/28/2001	Hiromi Ishikawa	Q65937	4455

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EXAMINER

LEE, SHUN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 01/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,659

Applicant(s)

ISHIKAWA, HIROMI

Examiner

Shun Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8, 15 and 16 is/are allowed.
- 6) ☒ Claim(s) 9-14, 17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2001 and 06 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2 December 2004 has been entered.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9-14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller *et al.* (US 6,373,074) in view of Endriz (US 5,594,752) and Ishiwata (US 6,157,756).

The specification (pg. 27) discloses that a cylindrical lens comprises both uniform and varying curvatures over the lens longitudinal direction.

In regard to claims **12-14** and **18**, Mueller *et al.* disclose (Figs. 1-4, and 7) a radiation image read-out apparatus, comprising:

- (i) stimulating ray irradiating means (11, 20, 21, 22, ..., 29) for linearly irradiating stimulating rays (16, 41) through a reproduction optical device (30, 31, 32, ..., 39) such as a cylindrical lens (column 7, line 54 to column 8, line 57) onto an area of a stimuable phosphor sheet (15), on which a radiation image has been stored (column 4, lines 51-54), the stimulating rays (16, 41) causing the stimuable phosphor sheet (15) to emit light (17) in proportion to an amount of energy stored thereon during its exposure to radiation,
- (ii) a line sensor (12), which comprises a plurality of photoelectric conversion devices (PD1, PD2, ..., PDn) arrayed along the linear area of the stimuable phosphor sheet (15) exposed to the linear stimulating rays (16, 41), and
- (iii) sub-scanning means (71, 72, 73) for moving the stimuable phosphor sheet (15) with respect to the stimulating ray irradiating means (11, 20, 21, 22, ..., 29) and the line sensor (12) and in a direction (A) intersecting with a length direction (B) of the linear area of the stimuable phosphor sheet (15) exposed to the linear stimulating rays (16, 41),

wherein the stimulating ray irradiating means (11, 20, 21, 22, ..., 29) comprises:

- a laser diode or a plurality of laser diodes (LD1, LD2, ..., LDn, 20, 21, 22, ..., 29) are located such that laser beams, which have been produced by the laser

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diodes (LD1, LD2, ..., LDn, 20, 21, 22, ..., 29) and act as the stimulating rays (16, 41), stand in a row along the length direction (B) of the linear area of the stimuable phosphor sheet (15) exposed to the linear stimulating rays (16, 41), wherein the plurality of the laser diodes (LD1, LD2, ..., LDn, 20, 21, 22, ..., 29) are located such that the laser beams, which have been produced by the laser diodes adjacent to each other among the plurality of the laser diodes (LD1, LD2, ..., LDn, 20, 21, 22, ..., 29), stand in a row so as to have an overlapping region, at which the laser beams overlap each other (column 7, line 54 to column 8, line 57), and

the reproduction optical device (30, 31, 32, ..., 39) such as a cylindrical lens (column 7, line 54 to column 8, line 57), which converges each of the laser beams with respect to one direction in order to form a linear laser beam wherein the linear laser beam is converged each only in a plane is parallel to a junction plane of the laser diodes (LD1, LD2, ..., LDn, 20, 21, 22, ..., 29).

While Mueller *et al.* also disclose a reproduction optical device such as a cylindrical lens, the apparatus of Mueller *et al.* lacks that the reproduction optical device comprises a cylindrical lens having a single continuous cylindrical surface with the curvature varying over a lens longitudinal direction, such that a beam diameter of the linear laser beam at the linear area of the stimuable phosphor sheet exposed to the linear stimulating rays becomes uniform. However, optical devices such as lenses for an array of laser diodes are well known in the art. For example, Ishiwata teaches (column 1, lines 6-61) it is known in the art that reproduction optical device (comprising lenses,

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prisms, and gratings) are used to expand a laser beam into a single line. Ishiwata also teaches (column 6, line 50 to column 7, line 15; column 8, lines 8-15; and column 14, lines 34-49) to provide an anamorphic lens system (e.g., a cylindrical lens having a curvature varying over a lens longitudinal direction) and a fiber array (i.e., fiber grating) in order to expand a laser beam into a uniform intensity arc (i.e., line). Further, Endriz teaches (column 5, lines 25-53) that lenses for an array of laser diodes can be integrated into a single lens. Therefore it would have been obvious to one having ordinary skill in the art to provide a single cylindrical lens (e.g., an integrated array of cylindrical lenses with a single continuous cylindrical surface with the curvature varying over the lens longitudinal direction) in the apparatus and method of Mueller *et al.*, in order to expand the laser beam into a uniform intensity line while reducing the number of lens mountings to a single lens mounting (e.g., a reduction from a lens mounting for each laser diode to a single lens mounting for the laser diode array).

In regard to claims **9-11** and **17**, the method steps are implicit for the modified apparatus of Mueller *et al.* since the structure is the same as the applicant's apparatus of claims 12-14 and 18.

Allowable Subject Matter

5. Claims 1-8, 15, and 16 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be directed to a nonobvious improvement over the invention patented in US Patent 6,373,074. The improvement comprises in combination with other recited elements, that each of the laser diodes are located in an

orientation such that a beam spread direction, which is normal to a junction plane, approximately coincides with the direction, along which the laser beams stand in a row.

Response to Arguments

7. Applicant's arguments filed 2 December 2004 have been fully considered but they are not persuasive.

Applicant argues that the prior art of record fails to teach or suggest where the laser diode is located in an orientation such that the beam spread direction, which is parallel with the junction plane, coincides with the direction, along which the stimulating rays stand in a row. Examiner respectfully disagrees. It is noted that applicant admits (first paragraph on pg. 3 of remarks filed 4 October 2004) that the drawings of Mueller *et al.* and Endriz show the direction of the junction plane. The drawings of Mueller *et al.* and Endriz illustrates the laser diode is located in an orientation such that the beam spread direction, which is parallel with the junction plane, coincides with the direction, along which the stimulating rays stand in a row. Therefore, Applicant's arguments are not persuasive in regard to claims 9-14, 17, and 18.

Conclusion

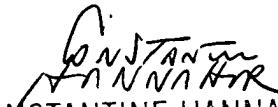
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL


CONSTANTINE HANNAHER
PRIMARY EXAMINER
GROUP ART UNIT 2878